REMARKS

Applicant expresses appreciation to the Examiner for consideration of the subject patent application. This amendment is in response to the Office Action mailed October 19, 2005. Claim 21 was objected to. Claims 19, 20 and 22-29 were rejected. The claims have been amended to address the concerns raised by the Examiner.

Claims 1-30 were originally presented. Claims 1-18 were previously cancelled. Claims 19-30 remain in the application. No claims have been added. No claims have been amended.

The indication of allowable claim 30, and the indication of allowable subject matter in claim 21, if rewritten in independent form, is acknowledged with appreciation.

Claim Rejections - 35 U.S.C. § 102

Claims 19-20 (including independent claim 19) were rejected under 35 U.S.C. § 102(b) as being anticipated by Gilligan, US 4,473,892.

Gilligan discloses a ruggedized, vibration resistant magnetic core stack having a low mass. A typical magnetic core memory device is constructed of a ferrite (highly permeable) material. The ferrite core is magnetized by a flux field produced when a current flows in a wire (drive line) that is threaded through the core. The core retains a large amount of this induced flux when the current is removed. Flux lines can be established clockwise or counterclockwise around the core, depending upon the direction of the magnetizing current. A current in one direction establishes a magnetization in the core in a given direction. Reversing the direction of the current flow reverses the direction of the flux field and the core magnetization. These two unique states represent "0" or "1" respectively. (See http://ed-thelen.org/comp-hist/navy-core-memory-desc.html).

The simple ferrite core structure of the memory enables it to be used in military and space applications where radiation, vibration, heat, and other extreme conditions exclude the use of more standard memory devices constructed of semiconducting material. A magnetic core memory, as disclosed in Gilligan, is typically formed in a generally planar structure by mounting a single layer of magnetic cores upon the planar structure. (Gilligan, Col. 1, lines 64-68). The planar structure acts as a ground plane comprised of aluminum. (Gilligan, Col. 2, lines 3-20). A

stack of the cores can be formed by folding the aluminum ground plane upon itself. An insert, such as a rubber coated sheet, can be placed between the cores of the folded stack. Gilligan teaches that a laminate stack of the magnetic cores that is vibration resistant can be formed by coating the planar structure with silicon rubber to dampen vibrations when it is folded into a stack with a desired number of layers. (Gilligan, Col. 1, lines 45-48). Diode boards are coupled to the stack to enable communication with the magnetic cores. (Gilligan, Col. 6, lines 17-56).

In contrast, claim 19 of the present invention recites a method of fabricating multiple layers of a memory device, comprising:

assembling a common substrate having multiple sections;

constructing at least one fold line on the substrate to separate the multiple sections;

fabricating memory structure on at least two sections of the substrate;

depositing a semiconductor layer on at least one section of the substrate; and

folding the substrate along the fold line to stack the multiple sections on top of each other and align the memory structures on adjacent folded sections so that the memory structures interact with each other to thereby form a plurality of diodes.

Contrary to the magnetic core stack memory device disclosed in Gilligan, the method of forming the memory device recited in claim 19 includes the operation of depositing a semiconductor layer on at least one section of the substrate, as taught in the specification on page 16, lines 21-28. Gilligan does not disclose depositing a semiconductor layer on a substrate. Rather, as previously discussed, Gilligan discloses a type of memory specifically formed to be substantially free of semiconductors. The memory device disclosed in Gilligan uses ferrite cores with wire threaded through the core. Placing a layer of semiconductor on the magnetic core stack substrate may limit the use of the memory in hostile environments. It should be noted that the silicon rubber layer placed on the planar structure disclosed in Gilligan is not a semiconductor layer. Rather, the rubber is an insulating layer used for its mechanical properties, not its electrical properties in the formation of memory. Therefore, Gilligan does not disclose depositing a semiconductor layer.

Additionally, Gilligan fails to disclose the operation of folding the substrate in such a way that memory structures in adjacent folded sections are aligned and interact with each other, as

recited in claim 19. Gilligan does not teach that the memory structures disclosed in Gilligan, comprised of ferrite cores, interact with each other in any way when the ground plane is folded. Rather, it appears that the planar structure disclosed in Gilligan is only folded to increase the density of the ferrite cores so that they are "compact in size". (See Gilligan, Col. 1, line 48).

Further, the memory structures disclosed in Gilligan do not interact to form a plurality of diodes, as recited in claim 19. Gilligan discloses diode boards to which the memory structures are connected. (See Gilligan Col, 8, lines 17-23). However, Gilligan does not teach that the ferrite cores interact when folded to form a plurality of diodes.

Therefore, Applicant respectfully submits that independent claim 19 is allowable, and urges the Examiner to withdraw the rejection.

Rejection of the dependent claim 20 should be reconsidered and withdrawn for at least the reasons given above with respect to the independent claim. The dependent claim, being narrower in scope, is allowable for at least the reasons for which the independent claim is allowable.

Claim Rejections - 35 U.S.C. § 103

Claims 19-20 and 22-29 (including independent claim 19) were rejected under 35 U.S.C. § 103 as being unpatentable over Smith et al., US 5,224,023 (hereinafter "Smith"), in view of Kuriyama, US 5,459,641.

The Smith and Kuriyama references, when combined, do not teach or suggest all of the elements of independent claim 19. Specifically, the Smith does not teach or suggest a method of depositing a semiconductor layer on at least one section of the substrate as recited in claim 19 and previously discussed above. Nor does Smith teach or suggest folding the substrate to form a plurality of diodes, as in claim 19. The Kuriyama reference does not overcome these deficiencies.

Smith discloses a flexible substrate capable of having at least three sections folded on each other. The substrate is sandwiched between half-sections of each board, so that components can be mounted on both faces of each board. The multiple sections can be folded so that they are disposed in a stacked configuration and are held in place by posts extending through the boards.

(See Smith column 1, line 58 through column 2, line 33). The substrate disclosed in Smith merely carries a plurality of preformed chips. The substrate does not include a semiconductor layer deposited on at least one section. Additionally, neither the substrate nor the preformed chips disclosed in Smith are designed to fold along the fold line to stack the multiple sections on top of each other and align memory structures on adjacent folded sections so that the memory structures interact with each other to thereby form a plurality of diodes.

Moreover, the addition of the Kuriyama reference does not overcome the deficiencies of Smith. Kuriyama merely discloses a mounting structure for a preformed electronic component such as a capacitor or diode. Kuriyama does not teach or suggest the operation of depositing a semiconductor layer on at least one section of the substrate, as in claim 19. Nor does Kuriyama teach folding a substrate on top of each other or aligning memory structures on adjacent folded sections so that the memory structures interact with each other to thereby form a plurality of diodes, as recited in claim 19. The mere fact that Kuriyama discloses the use of diodes in microelectronic devices does not teach or suggest the elements of claim 19. A combination of Smith and Kuriyama would likely result in the device disclosed in Smith with a new method for attaching the preformed chips to the foldable substrate, as taught in Kuriyama. Their combination would not result in the invention recited in claim 19.

Therefore, Applicant respectfully submits that independent claim 19 is allowable, and urges the Examiner to withdraw the rejection.

Rejection of the dependent claims 20 and 22-29 should be reconsidered and withdrawn for at least the reasons given above with respect to the independent claim. The dependent claims, being narrower in scope, are allowable for at least the reasons for which the independent claim is allowable.

CONCLUSION

In light of the above, Applicant respectfully submits that pending claims 19-30 are now in condition for allowance. Therefore, Applicant requests that the rejections and objections be withdrawn, and that the claims be allowed and passed to issue. If any impediment to the allowance of these claims remains after entry of this Amendment, the Examiner is strongly encouraged to call Vaughn W. North at (801) 566-6633 so that such matters may be resolved as expeditiously as possible.

No claims were added. Therefore, no additional fee is due.

The Commissioner is hereby authorized to charge any additional fee or to credit any overpayment in connection with this Amendment to Deposit Account No. 08-2025.

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Respectfully submitted,

Vaughn W. North

Vaughn W. North
Registration No. 27,930

THORPE NORTH & WESTERN, LLP
Customer No. 20,551
P.O. Box 1219
Sandy, Utah 84091-1219
Telephone: (801) 566-6633